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ABSTRACT

This study determined whether preservice social studies teachers, who received training specifically designed to help them learn to recognize and write four types of questions associated with eliciting student values clarification statements, would elicit and permit more of these desired student verbal behaviors than preservice teachers who had not received training in the four types of questions. Twenty-six preservice teachers taught microlessons in social studies to eighth grade students; data were collected using three observation instruments and were analyzed using the covariance technique. Students of teachers who received training in values clarification questioning behaviors did use significantly more statements associated with this instructional objective. The experimental teachers achieved their values clarification objectives without a decrease in the level of student subject-centered behaviors. The experimental teachers also used significantly more probing moves but did not differ in their use of other technical teaching behaviors known to be positive correlates of student process and product variables. (Author/RC)

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THE EFFECTS OF THE ACQUISITION OF A VALUES CLARIFICATION QUESTIONING STRATEGY ON SUBSEQUENT TEACHER AND STUDENT PROCESS VARIABLES WITHIN A MICROTEACH-RETEACH SEQUENCE

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ABSTRACT

Values clarification is a popular and worthwhile instructional objective. Can teachers secure patterns of student statements congruent with values clarification without implementing a well-defined questioning strategy? An experimental study using preservice teachers was conducted to investigate this question. Data were collected using three observation instruments and were analyzed using the covariance technique. Micro-students of teachers who received training in values clarification questioning behaviors did use significantly more statements associated with this instructional objective. Interestingly, the Experimental teachers achieved their values clarification objectives without a decrease in the level of student subject-centered behaviors. The Experimental teachers also used significantly more probing moves but did not differ in their use of other technical teaching behaviors known to be positive correlates of student process and product variables. Teachers can incorporate a questioning strategy related to this instructional objective into their existing patterns of instructional behavior without significantly altering these patterns.

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The Effects of the Acquisition of a Values Clarification Questioning Strategy on Subsequent Teacher and Student Process Variables Within A Microteach-Reteach Sequence

by

Robert J. Stahl, Ed.D

INTRODUCTION

Among those behaviors associated with the act of teaching, perhaps the most accepted and certainly among the most used is that of questioning. Regardless of whether their instructional objectives are the same or are different, teachers have long sought to achieve their goals through the use of varying questioning strategies. Conventional wisdom has linked effective teaching with the ability of the teacher to ask questions. As if to confirm this relationship, recent theories of values clarification have stressed the role of teacher questions in facilitating this process during classroom learning episodes. Due to the importance of teacher questions within these approaches to values clarification, is it possible for teachers who have values clarification as their instructional objective to achieve their goal without employing a well defined questioning strategy? Secondly, do teachers who strive to reach the instructional goal of values clarification employ questioning behaviors congruent with their objectives; and, if so, can these questioning strategies be taught to preservice teachers?

The primary purpose of this study was to determine if preservice social studies teachers who received training designed specifically to assist them learn to recognize and write four types of questions associated with eliciting student values clarification statements would elicit and permit more of these desired student verbal behaviors than preservice teachers who also had values clarification as an objective but who had not received training in the four types of questions. Using an instructional module developed to teach preservice teachers to recognize and write four types of questions, an experimental study was designed to investigate the effects of a two-hour training session which employed the instructional module on subsequent teacher-student interaction in a microsetting using eigth grade students as microstudents.

The fact that the particular questioning strategy selected dealt with the area of values clarification is important. Values clarification is presently one of the major movements in contemporary American education. However, in spite of the popularity and inclusion of values clarification within the precollege curriculum, several interrelated problems have persisted regarding the entire spectrum of theories and activities associated with this instructional area. Among the major concerns are:

a) the lack of a clearly defined, behavioral-oriented definition of values clarification;
b) the general inadequate level of training teachers have received in this area;

c) the massive assortment of values-related curriculum materials provided to teachers who have little knowledge as to how to use them appropriately;
d) the lack of reliable, tested, useable evaluation and descriptive procedures and instruments to measure values development and change in students; and,
e) the lack of empirical evidence that teacher training procedures and sessions related to values clarification instructional objectives do result in observable changes in either teacher or student behaviors.

This study grew out of concerns similar to this. Superka (1974) cites similar concerns.

A VERBAL APPROACH TO VALUES CLARIFICATION

While values clarification as defined by Raths et al (1966) and Simon et al (1972) is primarily an internal process, the activities and events surrounding this process may take the form of external, objective behaviors. Casteel and Stahl (1973, 1975) have defined one approach to values clarification in terms of observable student performance criteria. These authors have defined the process of values clarification as involving patterns of language which students use and from which the teacher may reasonably infer that (internal) valuing is occurring. Specifically, values clarification refers to desired patterns of student verbal statements the occurrence of which can be used as a basis for inferring that students are comprehending, conceptualizing, and engaged in the process of clarifying their values.

The Four Phases of Values Clarification

Three of the four phases of the values clarification strategy proposed by Casteel and Stahl were particularly relevant to this study. The three phases are (1) the Comprehension Phase, (2) the Relational Phase, and (3) the Valuation Phase. Because each of these phases was defined in terms of categories of the Social Science Observation Record(SSOR) (Casteel and Stahl, 1973, 1975) which served as one of the instruments of this study, and because each of these phases was directly related to at least one of the four categories of questions making up a second instrument used in the study, each of these phases will be described briefly.

The Comprehension Phase stresses student understanding of mediated instruction (e.g., a reading, a cartoon, a poem, a contrived situation) relevant to a concept, topic, or idea that is being learned, studied or evaluated. During this phase, students are encouraged to identify and recall substantive data found in the learning resource. They are called upon to demonstrate their understanding of the resource and other available data. Five categories of student statements are associated with this phase of values clarification. These five categories are topical, empirical, interpretive, defining, and clarifying statements. During this phase, the teacher would expect to hear students expressing these five categories of student behaviors.

The Relational Phase stresses student understanding and interpretation of data in light of the concept or idea that is the focus of ongoing inquiry. This phase allows the teacher to integrate values clarificatin with other

learning activities in order to teach content area materials and data. During this phase, students search for and establish connections between the data provided in the resource and the idea or theme serving as the focus of inquiry. They may also identify relationships that exist between two or more segments of data found within the resource itself. The six categories of student verbal behaviors associated with this phase of values clarification are topical, empirical, interpretive, defining, defining, clarifying, and criterial statements.

The Valuation Phase stresses student personal reactions to the mediated instructional materials, to student ideas about the content contained in the instructional resource, or to a problem situation expressed in the form of their personal preferences and feelings. Objects of valuation may be judged using such words as good, bad, better, worse. Preferences may be given different objects or individuals according to how an individual or group chooses to organize his priorities. Feelings may be aroused and expressed with regard to a particular object, action, or policy. The valuation phase is associated with five categories of student statements. These five categories are preferential, criterial, consequential, imperative, and emotive. When these verbal behaviors occur, the teacher infers that students are using valuing skills while engaged in the process of clarifying their values.

The Four Interrogative Modes

In addition to identifying the specific categories of student verbal behavior associated with the three phases of values clarification just described, four interrogative modes or questioning behaviors that the teacher may employ in order to elicit student statements congruent with each of these three phases have also been identified and described. (See Figure 1).

BRIEF REVIEW OF THE LITERATURE ON THE ROLE OF QUESTIONS IN CLASSROOM INQUIRY

One assumption underlying recent theories associated with the different approaches to values clarification is that the teacher's ability to use questioning strategies is crucial to the success of instructional episodes identified with each of these approaches. In most cases, the theoriests have assumed that the teachers already possessed the questioning skills necessary to implement instructional activities based upon these theories. Values clarification as in other forms of social and personal inquiry, ineffective questions are not likely to produce expected learning processes or desired student verbal behaviors consistent with these processes.

The importance of the single variable of teacher questions has been argued among educational researchers. Kirkton (1971) and Gall (1970) reviewed research findings in regards to this single variable and concluded that the literature was inconclusive as to what makes a good question or a question effective. After reviewing research reports related to questioning, Dunkin and Biddle (1974) concluded that there was little evidence to recommend that teachers either increase or decrease their asking of questions or that teacher questions in and of themselves are related to student process variables. Studies of teacher questioning behaviors and the results of these behaviors on student verbal interaction patterns led Gall and his associates (1974) to conclude that what was desirable, especially when working with preservice teachers, was a more "fine-grained" analysis of teacher questions.

THE FOUR INTERROGATIVE MODES

EMPIRICAL	RELATIONAL	VALUING	EMOTIVE
What did you see?	How does what you saw relate to the topic?	Is this proposed new policy good for man?	Do you feel excited about what you saw? heard? read? experienced? remember?
When did it occur?	How does what you heard relate to the topic?	Are the events you witnessed bad for those persons seeking to protect our energy supplies?	Now that you know music may be related to noise pollution, how do you feel towards 'acid-rock'?
Who wrote the article?	In what way does what you just read relate to what you saw yesterday?	Are the expected consequences of the project good for our community?	Are you upset that no one has effectively stopped man's pollution of the environment?
What did you read?	How does what you observed relate to our topic?	If we all agreed with the feeling you just expressed, would your decision still be the right one to take in this situation?	If you found yourself in the situation we have described, what would be your most immediate feelings.
What did you observe?	When you identified anxiety as a good consequence, how were you relating it to your decision to continue wasting energy?		
Where did it take place?			
What did you experience?			
What do you remember?			
What happened?			

Figure 1

Types of Teacher Questions Associated with Values Clarification

Technical Teaching Behaviors Associated With Student Process and Product Variables

Often overlooked in research investigations is the possibility that when specific changes is teacher behaviors are made or advocated, then other behavior changes also take place to accommodate or adjust for these changes. Some of these behaviors may be compensatory in nature. Since teaching is a series of interrelated, sequential patterns of behavior, when steps are taken to modify one teaching behavior, the effects of this modification may be noticed within the entire chain of behaviors making up an individual's own teaching style. Thus, if teachers attempted to implement a novel questioning strategy designed to help them obtain an instructional goal, unless this strategy was similar to one they had already acquired or developed, one would expect shifts in a number of other teaching behaviors.

Specific types and patterns of teaching behaviors associated with the general labels of structuring, conditionals, wait-time, differentiated reinforcement, and probing have been found to be positive correlates of desired student process and product variables. In addition, teacher use of post-question structure, multiple questions, and the like have been found to be negative correlates of these student behaviors. Casteel and Gregory (1975) and Stahl (1975) have reviewed this literature elsewhere. Those teacher manipulable behaviors have been identifid by these researchers as 'Technical Teaching Skills' and are differentiated from the negative behaviors which have been labeled 'dysfunctional moves.'

Casteel, Gregory, and Stahl have questioned the wisdom of stressing questioning skills in isolation from other teaching skills. They speculated that a stress on the acquisition of a questioning strategy may eventuate in an increase in dysfunctional teacher and student behaviors unless the target population had already acquired other skills. This possiblility was investigated as one component of this study.

In addition to the speculation just cited, the assumption that there is a direct relationship between teacher questions and immediate student responses has been questioned by mathemagenic learning theorists (Rothkopf, 1966; Anderson, 1970). According to their investigations, when a child is helped to attend, to segment, to translate, and to process information, his performance is superior to that of a child who is not so assisted. Even though mathemagenic learning theorists have stressed the mediation of learning through written materials, Anderson suggested the possibility that the teacher may complement written mediation or even serve as the mediating source of data and information. Casteel and Gregory (1975) and Stahl (1975) have also raised questions and speculations as to this possibility. If they are correct, then stressing the acquisition of teacher questioning skills without simultaneously stressing other teacher skills, i.e., the Technical Teaching Skills, may have little impact on student process but more importantly student product variables.

To summarize, the literature on teacher questioning behaviors and other teacher process variables suggests that:

a) teachers have been encouraged to utilize questioning strategies in order to obtain and achieve their values clarification instructional objectives;

b) questions are used by teachers in the hope that such utilization will enable them to influence and manage the environment of the classroom in ways they perceive as desirable;
c) the use of questions have not been found to be highly related to positive student process and/or product variables; and,
d) teachers may need to learn to use technical teaching skills along with appropriate questioning strategies if they are to achieve their instructional objectives while simultaneously stimulating positive student product and process outcomes.

An experimental study designed to investigate the consequences of a teacher training module associated with values clarification questioning behaviors on the verbal behavior of students within a microsetting would shed some light on the impact of stressing the acquisition of a questioning strategy on subsequent student verbal behavior as well as changes in the pattern of teacher presentational and instructional behaviors reported to be positively and negatively correlated with student process, product, and process and product variables.

HYPOTHESES

This study sought to investigate process variables related to student values clarification verbal behaviors, teacher use of questions identified with the first three phases of values clarification, and teacher use of technical teaching skills. Figure 2 lists the 20 hypotheses posulated for this experimental study. Each of the hypotheses was framed within the context of the particular component of the observational instruments used in the study. Ten hypotheses were framed within the context of the Social Science Observation Record(SSOR); four employed the four Four Interrogative Modes Observation Schedule(FIMOS); and, six employed the Technical Skills Observation Schedule(TSOS).

DESIGN AND PROCEDURES

Design

Following the Campbell and Stanley notation model (1963) and including their suggestion to include a notation regarding any placebo activity, the design for the experimental study was as follows:

R	O_1	X_p	+	X_1	O_2
R	O_3	X_p			O_4

This design is similar to that referred to by these authors as the Pretest/Posttest Control Group Design.

The 12 factors which possessed the potential to jeopardize the internal and external validity of this experimental study were examined. This examination revealed that all eight threats to internal validity and two of the four threats to external validity were reduced by the use of the procedures employed.

Hypothesis*	Description
H_1	Student use of empirical statements
H_2	Student use of interpretive statements
H_3	Student use of preferential(valuing) statements
H_4	Student use of emotive(feeling) statements
H_5	Student use of subject(content)-centered statements
H_6	Teacher use of teacher(control)-centered statements
H_7	Student use of man(valuation)-centered statements
H_8	Student use of extended patterns of subject(content)-centered statements
H_9	Teacher use of extended patterns of teacher(control)-centered statements
H_{10}	Student use of extended patterns of man(valuation)-centered statements
H_{11}	Teacher use of empirical questions
H_{12}	Teacher use of relational questions
H_{13}	Teacher use of valuing questions
H_{14}	Teacher use of feeling questions
H_{15}	Teacher use of structuring moves or behaviors
H_{16}	Teacher use of conditional moves or behaviors
H_{17}	Teacher use of wait-time moves or behaviors
H_{18}	Teacher use of probing moves or behaviors
H_{19}	Teacher use of indicative (reinforcing) moves or behaviors
H_{20}	Teacher use of dysfunctional (counterproductive) moves or behaviors

*All hypotheses were stated in the null form, i.e., there would be no difference between the two groups relative to the particular behavior(s).

Figure 2: A Description of the Twenty Hypotheses Tested in This Experimental Study.

Subjects

The subjects for the experimental study were 26 of 27 preservice social studies teachers enrolled in a nine-hour undergraduate social studies methods block in the College of Education, University of Florida. These subjects were not randomly selected from the target population but were selected from a sample of convenience or from an 'experimentally accessible population' (Bracht and Glass, 1968). The 26 subjects were randomly assigned to their respective Experimental and Control groups. Presage variables revealed the students were near equal in terms of age, race, sex, marital status, major field of study within the broad range of the social sciences, and college of emphasis (i.e., A & S or Ed.).

The students these subjects taught during their microlessons were enrolled in Westwood Middle School located in Gainesville, Florida. All students selected were enrolled in required eighth grade American History classes taught by the same teacher.

Procedures

As part of their methods course assignment, the subjects were required to participate in the two microteaching lessons and to attend the treatment or placebo class session planned for the second week of the three-week study. No requirements regarding the quality of their participation in either the microlessons or the values clarification training sessions were set. Hence, attendance was mandatory; participation was voluntary within the teaches and the sessions. Each subject was assigned randomly to a time period for the first of the two microlessons. A second time period, exactly two weeks from the first, was assigned for the second microlesson.

The topics for both microlessons were to be related to the topics the subjects had been using to develop unit and daily lesson plans as part of their regular work in the methods course. They were not allowed to change topics for their second teach.

Treatment

During the second week, the subjects met for their specific treatment activities. The groups met in different rooms. Two graduate assistants, both of who had read but not studied the placebo and treatment module materials, conducted the group sessions. The placebo materials consisted of materials from Simon, et al (1972, pages 13-22). Both groups read these and were then charged with incorporating values clarification as a component in their second microteach lesson. They were reminded that their grades would not be affected if they did not chose to do so. The experimental group received a 40-page instructional module designed to explain the four interrogative modes upon completing their reading of the Simon materials. Subject behavior regarding the module was voluntary. They were told the module might be of help to them if they wanted to achieve their values clarification objectives. Some subjects worked through the entire module while some skimmed it. Hence, all subjects had the 'opportunity' to acquire a questioning strategy. After two hours, all materials from both groups were collected.

Instrumentation

The Social Science Observation Record(SSOR): The SSOR is an interaction analysis category system designed to abstract and describe teacher and student verbal and non-verbal behaviors during class discussion (Casteel and Stahl, 1973). The system was conceived and constructed as a theoretical model for planning and guiding classroom discussions, specifically those discussions directed toward values clarification as an aspect of subject matter instruction. It operationalizes the instructional theory relating student understanding and values clarification to ongoing content-centered teaching units presented earlier. Specific and observable teacher and student behaviors associated with this instructional theory can be identified and described in terms of the 17 categories, 4 realms, and 12 submatrices of the SSOR system. The system thus provides a conceptual model linking cognitive, affective, and management dimensions of social inquiry.

The coder collected live SSOR data in the microlab. This same coder collected all SSOR data used in this study. Between-coder agreement involved the trained coder and one of the developers of the SSOR system. This coder did not know the purposes of the study nor which subjects were in the Experimental or Control groups. Using Scott's method for computing between-coder agreement scores, mean coefficent scores of .94 for realms, .90 for categories, and .84 for submatrices were obtained. Within-coder agreement scores using the same procedure were also obtained. Mean scores were found to be .97, .93, and .86 for realms, categories, and submatrices respectively. (See Figures 3 and 4).

The Four Interrogative Modes Observation Schedule(FIMOS): Four types of questioning modes relevant to eliciting values clarification verbal responses from students have been identified (see Figure 1). The treatment module entitled "Verbal Strategies of Valuing" was designed specifically to train teachers to recognize and use these four interrogative modes. At the same time, the module stresses the type of student verbal behavior each of these questioning modes is to elicit. For purposes of this study, these four modes were incorporated into an observation instrument known as the FIMOS. Each of the four interrogative modes described earlier is congruent with one of the four categories of teacher behaviors making up the FIMOS. Thus, the four categories of the FIMOS are (1) Empirical, (2) Relational, (3) Valuing, and (4) Feeling. Each category was defined so that a trained observer-coder could be trained to to code and record each instance of each of these behaviors as it occurred in the class discussion.

Agreement scores using the percent-agreement procedure were obtained. Scores of .90 and higher were regularly received on both between-coder and within-coder tests conducted throughout the study. The coder collected these FIMOS data from audiotapes of the microlessons.

The Technical Teaching Skills Observation Schedule(TSOS): The TSOS is a frequency observation scheme designed to abstract and record the occurrence of a number of specific teacher-controlled behaviors as they occur in the class-

THE SSOR: AN OVERVIEW OF FUNCTIONS*

Realm	Category of Statement	Function*
I. Subject-Centered	1. Topical	identifying the focus
	2. Empirical	stating facts
	3. Interpretive	assigning meaning
	4. Defining	avoiding semantical confusion
	5. Clarifying	elaborating ideas
II. Teacher-Centered	6. Infirming	criticizing
	7. Commentary	consolidating and structuring
	8. Dissonant	requesting clarification
	9. Interrogative	eliciting responses
	10. Confirming	reinforcing
III. Man-Centered	11. Preferential	assigning value ratings
	12. Consequential	anticipating effects
	13. Criterial	identifying the basis
	14. Imperative	considering decisions
	15. Emotive	expressing feelings
IV. Non-Verbal	16. Silence	wait time
	17. Confusion	adjustment time

*The functions as given are meant to be illustrative but no inclusive.
(Source: J. Doyle Casteel and Robert J. Stahl, c. 1973.)

Figure 3: The SSOR Function Chart

SOCIAL SCIENCE OBSERVATION RECORD (SSOR) MATRIX

J. Doyle Casteel and Robert J. Stahl (c. 1973)
College of Education, University of Florida

Code_____

	1. Topical	2. Empirical	3. Interpretive	4. Defining	5. Clarifying	6. Infirming	7. Commentary	8. Dissonant	9. Interrogative	10. Confirming	11. Preferential	12. Consequential	13. Criterial	14. Imperative	15. Emotive	16. Silence	17. Confusion	Total
1. Topical																		
2. Empirical																		
3. Interpretive																		
4. Defining																		
5. Clarifying																		
6. Infirming																		
7. Commentary																		
8. Dissonant																		
9. Interrogative																		
10. Confirming																		
11. Preferential																		
12. Consequential																		
13. Criterial																		
14. Imperative																		
15. Emotive																		
16. Silence																		
17. Confusion																		
Totals (No.)																		
Totals (%)																		

REALM TOTALS/% I ___/___ % II ___/___ % III ___/___ % IV ___/___ %

Total Count _____ Cells Reached (289) _____ Categories Used (17) _____
Extended State Cells (17) _____ Ext. State Cell Freq. _____ 7-9 Count _____

Subm. Use (No.): A___ B___ C___ D___ E___ F___ G___ H___ I___ J___ K___ L___ TOTAL___
Sub. Use (%): A___ B___ C___ D___ E___ F___ G___ H___ I___ J___ K___ L___ TOTAL___
Sub. Use (Cells): A___ B___ C___ D___ E___ F___ G___ H___ I___ J___ K___ L___ TOTAL___

Name of Observed_____ Date___/__/7__ Place_____

Observer_____ Conditions_____ Topic_____

Time Observed___ min./___ sec. Total Time___ min./___ sec. Sex: M F Age_____

Other_____

room (See Figure 5). The system includes six classes of behaviors or 'moves' subdivided into 43 categories of functional and dysfunctional teacher behaviors. Five of these six classes, Structuring moves, Conditional moves, Wait-time moves, Probing moves, and Indicative moves, have been correlated positively with desirable student outcomes. The sixth Dysfunctional moves, is made up of behaviors known to be negative correlates of desirable student process and product variables. The TSOS (Casteel and Gregory, 1974) possesses construct validity. Its categories were formed from specific behaviors the research literature report are positively correlated with desired student outcomes. Reviews of this literature is elsewhere (Casteel and Gregory, 1975; Stahl, 1975).

Coefficient of observer agreement scores for the TSOS were obtained by using Scott's method. When these scores were checked, between-coder and within-coder coefficients of .94 and .84 for moves and categories were consistently obtained. The coder who used this system analyzed all sessions using the same audiotapes the FIMOS coder used.

Statistical Analysis

An analysis of covariance statistical procedure was performed to determine the degree of difference between the two groups in respect to the dependent variables examined in this study. In all cases, the decision to accept or reject the operational null hypotheses was based on a .05 level of significance.

One additional point was considered in the analysis of the data collected with this study. Much of the literature related to classroom interaction and teacher effectiveness emphasizes the frequency of occurrence of behaviors or events within the classroom setting. These reports frequently do not mention whether the time span for the data collection phase was identical for all subjects in all cases. If such were not the case, then variations in time may, in part, explain variations in frequency total counts, which may lead to significant differences or the lack thereof when in fact such differences may not exist (or did exist). Two ways to take into account this variation in time among subjects was to convert raw frequency data to percent of total frequency scores (percent scores) or to occurrences per minute scores (rate scores). For purposes of this paper, SSOR scores were examined in light of percent scores. FIMOS and TSOS scores will take the total frequency count score as the data to be examined. However, the rate scores for these ten categories of behaviors will also be discussed when appropriate.

RESULTS

Twenty hypotheses were tested in this study. These hypotheses focused on single category, multiple-category, and specific patterns of categories of teacher and student verbal behaviors. The particular process variables examinined as dependent variables were selected because they provided the range of information needed in order to assess the impact of the training module on the Experimental group teachers and to assess the impact on subsequent teacher and student behaviors of the efforts to employ the questioning strategy. No single instrument nor few hypotheses could have examined all these different aspects of the microlesson interaction. Hence, the numerous hypotheses were formulated in order to determine what changes, if any, would result as a consequence of the treatment module and session.

TECHNICAL SKILL OBSERVATION SCHEDULE(TSOS)*
J. Doyle Casteel & John W. Gregory

Subject _____ Date _____ Code #_____

	Category of Behavior	Instances	Total	Move Total
CONDITIONAL STRUCTURING MOVES	Lesson set			
	Internal set			
	Structured questions			
	Hypothetico-deductive			
	Present closure			
	Closure			
	Cueing structure			
	Linking conclusion			
	Linking question			
	Linking-reinforcement			
	Linking-criticism			
	Student-expressed cond.			
WAIT-TIME MOVES	Wait-time 1			
	Wait-time 2			
	Wait-time 3			
	Wait-time 4			
PROBING MOVES	Minimal reinforcement			
	Mild criticism			
	Clarify			
	Justify			
	Puzzlement			
	Reflect			
	Refocus			
	Relate			
	Re-direct			
INDICATIVE MOVES	Reinforce + Reinforce			
	Reinforce + Repeat			
	Reinforce + Reason			
	Verbal marker			
	Review citation			
	Integration			
	Reinforcement + Crit.			
	Criticism + Reason			
	Minimal criticism			
DYSFUNCTIONAL MOVES	Post-question struct.			
	Multiple questions			
	Interruptive			
	Disruptive(internal)			
	Disruptive(external)			
	Extended criticism			
	Tchr initiated ridicule			
	Stud-initiated ridicule			
	Stud-expressed confusion			

*Eighth Draft: Spring, 1975

Figure 5: The Technical Skills Observation Schedule

By formulating this large number of hypotheses, the investigator ran two risks: (1) that of receiving the cold shoulder from critics who would argue that if one formulated and tested enough hypotheses, on was bound to find significant differences among the numerous variables checked; and, (2) that of giving in to the temptation of reporting only those few hypotheses where significant differences were found. Practices such as the second would surely have drawn more attention to the final results of this study.

The Ten SSOR-Related Hypotheses

The first four SSOR-related hypotheses concerned themselve with the specific four categories of student statements which the four interrogative modes were designed to elicit. It was posited that because all four categories were related to content-centered, values clarification discussions and because both groups of preservice teachers were given these type discussions as part of their instructional objectives, then there would be no difference between the responses of microstudents taught by these teachers in regards to these four categories of statements. The fact that one group of teachers had the opportunity to acquire and implement a questioning strategy designed to elicit these four categories of student responses should have had little effect upon the results.

This reasoning was born out in the data(See Table 1). Of the four categories of student responses stipulated by these hypotheses, three failed to be rejected. No difference was found in student use of Empirical(H_1), Interpretive(H_2), and Emotive(H_4) statements. Only microstudent use of Preferential statements(H_3) was found to differ significantly between the two groups($p<.05$). When the adjusted posttest mean scores were compared, the microstudents of the Experimental group teachers had higher mean scores in three of the four student categories. The finding that no difference existed between the groups for the two content-centered student categories, Empirical and Interpretive, revealed the increase in the percentage of student values clarification responses did not decrease the percentage of their content-centered responses.

An examination of the three hypotheses related to SSOR realm-centered behaviors revealed a pattern similar to that just described. The hypothesis (H_5) which described the combined total of the five subject-centered student categories was not rejected while the hypothesis(H_7) which described the combined man-centered student categories was rejected($p<.05$). Once again, these data indicated the increase in the percentage of student values clarification related responses took place without a decrease in the percentage of content-centered responses. The thirde hypothesis in this set(H_6) concerned itself with the five teacher-centered categories of the SSOR. This hypothesis was not rejected. However, an examination of the adjusted posttest mean scores for the two groups of teachers did reveal a slight decline in the total number of these teacher-talk behaviors for Experimental group teachers at the same time an increase in student subject- and man-centered behaviors was occurring.

The last three SSOR-related hypotheses focused on the patterns of realm-related responses, i.e., submatrix definable patterns, employed by the teachers and their microstudents. These data followed the trend indicated in the earlier results mentioned above. The percentages of extended patterns of student subject-centered behaviors(H_8) were found to be similar for both groups.

Table 1

Analysis of Covariance Data for Percent of Behaviors Described by Components of The SSOR Instrument

Hypothesis Number	Description of Components	Source	MS	F	F^1
1	Empirical Statements	Between	6.98	.38	.18
		Within	18.35		
2	Interpretive Statements	Between	.06	.00	.02
		Within	42.97		
3	Preferential Statements	Between	8.98	5.08*	2.60
		Within	1.77		
4	Emotive Statements	Between	.38	.31	.05
		Within	1.23		
5	Realm I	Between	18.73	.22	.03
		Within	84.59		
6	Realm II	Between	219.81	2.08	1.01
		Within	105.47		
7	Realm III	Between	131.80	9.44*	3.76
		Within	13.97		
8	Submatrix A	Between	49.20	1.02	.50
		Within	48.41		
9	Submatrix E	Between	143.75	.95	.82
		Within	151.01		
10	Submatrix I	Between	37.16	10.83*	5.99*
		Within	3.43		

(df = 1, 23) *$p < .05$

[1] This F represents the F-value for each component for the frequency of use of the particular behavior.

Table 2

Raw and Adjusted Posttest Mean Scores for Percent and Frequency of Behaviors Described by Components of The SSOR Instrument

Hypothesis Number	Description of Components	Group	Percent			Frequency		
			Posttest $\bar{X}$	s.d.	Adjusted $\bar{X}$	Posttest $\bar{X}$	s.d.	Adjusted $\bar{X}$
1	Empirical Statements	Exp.	4.46	4.48	5.00	10.46	9.90	12.00
		Cont.	4.46	4.70	3.92	11.69	13.72	10.16
2	Intrepretive Statements	Exp.	14.38	8.47	13.90	33.77	26.85	31.94
		Cont.	13.52	5.06	14.00	31.15	16.10	32.98
3	Preferential Statements	Exp.	1.66	1.73	1.66	3.31	3.82	3.32
		Cont.	.49	.62	.69	1.38	1.89	1.37
4	Emotive Statements	Exp.	.69	1.40	.69	1.54	2.60	1.53
		Cont.	.44	.64	.45	1.31	1.89	1.32
5	Realm I	Exp.	22.71	11.71	22.76	51.54	23.95	51.79
		Cont.	21.11	7.81	21.06	50.15	26.10	49.90
6	Realm II	Exp.	63.90	16.32	63.93	153.46	73.47	146.95
		Cont.	69.76	7.08	69.74	158.54	59.59	167.05
7	Realm III	Exp.	7.56	4.97	7.85	15.62	9.15	16.06
		Cont.	3.56	2.78	3.27	10.00	8.60	9.55
8	Submatrix A	Exp.	9.17	8.30	9.45	20.69	23.73	21.53
		Cont.	6.96	6.32	6.68	17.23	16.83	16.39
9	Submatrix E	Exp.	46.87	19.72	47.21	117.23	70.35	110.24
		Cont.	52.27	9.40	41.92	118.77	46.82	125.76
10	Submatrix I	Exp.	3.05	2.87	3.27	6.15	5.24	6.41
		Cont.	1.05	1.06	.84	2.92	3.12	2.66

N = 13 in each group

Hence, this hypothesis was not rejected. But the percentages of extended patterns of values-clarification-related statements(H_{10}) were found to differ significantly between the two groups($p < .05$). This finding provided the third bit of data to confirm the fact that the increase in values clarification-related responses did not diminish the occurrences of student subject-centered behaviors. No difference was found in the percentage of extended patterns of teacher-centered behaviors which occurred within the microlessons. Therefore, this hypothesis(H_9) was not rejected.

In summary, of the ten hypotheses related to SSOR variables, only three, microstudent use of preferential statements(H_3), man-centered statements(H_7), and extended patterns of man-centered statements(H_{10}), were rejected. The remaining seven were not rejected. Data related to these ten hypotheses support the following conjectures and interpretations:

a) teachers who possess content-centered values clarification as an instructional goal have difficulty achieving this goal without some type of supportive, transactional strategy, i.e., a way of implementing this goal within the classroom. One such strategy would involve the use of questions;
b) teachers may achieve their values clarification instructional objectives without decreasing the level of substantive content-centered statements employed by their students; and,
c) the module entitled "Verbal Strategies of Valuing" can be used to modify the behavior of teachers towards making them more effective in achieving their affective goals when those goals are seen in terms of specific patterns of student verbal behavior.

The Four FIMOS-Related Hypotheses

These four hypotheses concerned themselves with the frequency of use of the four interrogative modes identified and described in the treatment module. Because content-centered teachers were believed to see value in empirical and relational questions and affective teachers were believed to see equal value in valuing and feeling questions, the investigator assumed that teachers would have employed these questioning behaviors when given the instructional goal of content-centered, values clarification inquiry. Hence, whether or not these teachers learned a questioning strategy, there was not expected to be any difference in the frequency of their use of these particular questions. An examination of the results revealed there was no difference between the two groups of teachers for all four categories of teacher questions. In other words, the impact of the instructional module made no difference on the subsequent behavior of the teachers when frequency of questions is the criterion. If one were to examine and accept this on face value, then the logical conclusion would be that the Experimental group teachers were able to elicit and permit significantly more values clarification student responses than were their Control group counterparts without increasing in significant ways the frequency of their questioning behavior. Such an interpretation would lend support to a 'quality' rather than 'quantity' influence of the module on these teachers' behavior. However, such may not be the case. (See Tables 3 and 4).

When rate scores relative to these four behaviors were examined, significant differences were found between the two groups of teachers for both Valuing(H_{13}) and Feeling(H_{14}) questions. No differences were found between their use of Empirical(H_{11}) and Relational(H_{12}) questions. This analysis of rate scores was

Table 3

Analysis of Covariance Data for Frequency of Behaviors Described by Components of The FIMOS and TSOS Instruments

Hypothesis Number	Description of Components	Source	MS	F	F^1
11	Empirical Questions	Between	7111.56	1.38	1.67
		Within	5149.07		
12	Relational Questions	Between	96.15	.64	2.85
		Within	150.88		
13	Valuing Questions	Between	3015.38	4.03	6.17*
		Within	747.59		
14	Feeling Questions	Between	553.85	2.20	4.93*
		Within	251.64		
15	Structuring Moves	Between	650.00	1.49	.17
		Within	435.60		
16	Conditional Moves	Between	2600.00	1.06	.64
		Within	2454.84		
17	Wait-Time Moves	Between	61.54	.06	.07
		Within	986.03		
18	Probing Moves	Between	2034.62	5.45*	4.73*
		Within	373.32		
19	Indicative Moves	Between	34.62	.10	.20
		Within	350.68		
20	Dysfunctionsl Moves	Between	865.38	.04	.05
		Within	22766.08		

(df = 1, 23) *$p < .05$

[1] This F represents the F-value for each component for the rate (occurrences per minute) of use of the particular behavior.

Table 4

Raw and Adjusted Posttest Mean Scores for Frequency and Rate of Behaviors Described by Components of The FIMOS and TSOS Instruments

Hypothesis Number	Description of Components	Group	Frequency			Rate		
			Posttest $\bar{X}$	s.d.	Adjusted $\bar{X}$	Posttest $\bar{X}$	s.d.	Adjusted $\bar{X}$
11	Empirical Questions	Exp.	13.54	5.80	13.67	1.15	.34	1.18
		Cont.	16.85	12.84	16.72	1.51	.93	1.48
12	Relational Questions	Exp.	1.31	1.31	1.32	.14	.15	.15
		Cont.	.92	1.12	.90	.06	.09	.06
13	Valuing Questions	Exp.	3.46	3.57	3.35	.37	.46	.35
		Cont.	1.30	1.55	1.43	.09	.10	.12
14	Feeling Questions	Exp.	2.46	1.71	2.50	.25	.22	.21
		Cont.	1.54	1.61	1.50	.12	.11	.16
15	Structuring Moves	Exp.	4.69	2.84	4.64	.38	.21	.39
		Cont.	3.69	2.59	3.74	.36	.21	.36
16	Conditional Moves	Exp.	9.69	6.40	9.58	.77	.47	.80
		Cont.	7.69	5.71	7.80	.64	.36	.61
17	Wait-Time Moves	Exp.	5.38	2.14	5.38	.53	.32	.53
		Cont.	5.08	4.35	5.09	.55	.58	.54
18	Probing Moves	Exp.	3.23	3.56	3.04	.30	.32	.26
		Cont.	1.46	2.44	1.65	.12	.17	.15
19	Indicative Moves	Exp.	1.69	1.80	1.66	.14	.13	.17
		Cont.	1.92	2.53	1.95	.18	.25	.21
20	Dysfunctional Moves	Exp.	30.77	15.74	30.85	2.54	.83	2.56
		Cont.	29.62	23.01	29.54	2.47	1.41	2.47

N = 13 in each grc p

not done in an effort to generate significant findings. These scores were examined because some way had to be found to adjust the frequency of occurrence of each subject's behavior to the total amount of time within which the subject could have behaved. Without such an adjustment, a frequency of six behaviors within four minutes would have been equated to an identical six behaviors occuring within a fifteen minute period. Using rate, these frequencies would have been converted to 1.5 and .4 occurrences per minute. From this perspective, what originally appeared to be no difference between the two six-count examples suddenly becomes a noticeable difference which is difficult to ignore. In following the rate procedure, the educational researcher equalizes data on the basis of the time span common to all behavior, i.e., the single minute segment, and ensures a more accurate determination of the real frequency of an occurrence, especially when such frequencies are to be compared to those of others.

In summary, all four FIMOS-related hypotheses developed from the types of questions described in the module entitled "Verbal Strategies of Valuing" were not rejected when frequency count scores were used as the basis of comparison. When rate scores were used, the Experimental group teachers were found to have used significantly more Valuing and Feeling questions than did their Control group counterparts. From the standpoint of rate score comparison, the Experimental group appeared to have achieved their values clarification student process objectives through the employment of a significantly greater number of questions deliberately designed to elicit these student verbal behaviors. Rejecting the rate score-based interpretation, one would be left to speculate as to whether these student verbal behaviors occurred as a results of: a) an improvement in the quality rather than quantity of the questions used; b) the ability of the Experimental group teachers to maintain some normal level of occurrence of these particular behaviors while the Control group teachers were unable to maintain this level within their lessons; or, c) a combination of a and b.

These data related to the four hypotheses in this set would support the following interpretations and conjectures:

a) teachers who are introduced to a questioning strategy they perceive as being related to their instructional goals and to the student responses likely to result from its use will tend to use the strategy;
b) when rate scores are used to adjust frequency scores in terms of time. the Experimental group teachers were found to have used significantly more questions related to the four interrogative modes than did their Control group counterparts; and,
c) when dealing with frequency data collected over uneven time periods, an experimenter should not assume equivalent time but should adjust the raw frequency count in order to treat the resultant rate scores as equivalents, i.e., as comparable scores. Converting to rate (per minute) scores is one practical and easy method of adjusting these type data.

The Six TSOS-Related Hypotheses

These six hypothese(H_{15}-H_{20}) concerned themselves with the frequency of occurrence of the five functional and one dysfunctional moves or sets of teacher behaviors making up the TSOS. These six moves were examined to determine to what extent preservice teachers accidently used or possessed within their

existing teaching repertoire and to investigate the effects, if any, of the acquisition of a questioning strategy on these behaviors. As such, the study of these six aspects of the interaction was entirely exploratory in nature.

Of the six moves, only for Probing Moves(H_{18}) was there found to be a significant difference($p < .05$) between the two groups of teachers. This held true for both frequency and rate scores. No difference was found between the groups for Structuring(H_{15}), Conditional(H_{16}), Wait-time(H_{17}), Indicative (H_{19}), and Dysfunctional(H20) moves. One possible interpretation of these data is that since the Experimental group teachers had studied a questioning strategy and since some of these teachers apparently tried to implement this strategy, these teachers may have become more sensitive to the importance of questioning. Because probing moves most often take the form of questions, these teachers may have been more inclined to follow-up their original questions with probing moves.

Interestingly, when the adjusted mean rate scores of the TSOS behaviors were examined, it was found that for both groups of teachers, more dysfunctional behaviors were used than were all five functional moves combined. Interpretation of this finding suggests that these preservice teachers, whether or not they had studied, acquired, or implemented a questioning strategy consistent with their instructional objective, employed more behaviors that were counter-productive to achieving their goals than they employed behaviors which were likely of assure successful attainment of those same goals.

This finding was one of the most significant of the entire study. It suggests that teachers do not appear to have large numbers of functional teaching behaviors in their natural teaching repertoire but do possess the tendency towards utilizing dysfunctional moves to achieve their objectives. Hence, in training teachers to learn, acquire, and utilize different teaching skills, one may be attempting to teach behaviors these teachers would not usually use intentionally and to assist them resist their natural tendency towards using dysfunctional behaviors. In other words, a 'tabla rosa' does not exist within the repertoire of preservice teachers. Finally, it would appear that teaching just a questioning strategy does not increase sufficiently the total number of functional moves a teacher uses. Thus, efforts to increase their use must take the form of a deliberate attempt to teach these moves. Casteel and Gregory(1974) have already indicated that such a program can work.

These data regarding technical teaching skills would suggest that:

a) educators concerned to assist teachers acquire the skill of asking probing questionmayhave more success via helping them to first learn a questioning strategy so that these teachers can elicit from students responses which then can be probed;
b) preservice teachers have in their natural repertoire of teaching-related behaviors very few behaviors likely to produce outcomes they desire while they simultaneously possess and/or tend to use many behaviors which are counterproductive to achieving their desired objectives;
c) preservice teachers may use many of the behaviors associated with desireable student outcomes but it would appear their use of these behaviors is highly accidental rather than being the result of a deliberate attempt to employ such behavior; and,

d) except for probing moves, the acquisition and implementation of a questioning strategy does not appear to affect either the functional or dysfunctional behaviors a teacher uses within the classroom.

DISCUSSION

For those concerned with assisting teachers to acquire ways of helping students to clarify their values, this study found that teachers are unable to translate values clarification as an instructional objective into student verbal behaviors consistent with this objective. These data report that teachers are unable to make this translation unless they employ a questioning strategy designed to assist them with this translation process. That is, just because teachers possess the objective of values clarification in no way guarantees that this objective will be realized in actual classroom practice. These data would appear to indicate that teachers need instruction as to specific types of questions which will enable them to obtain subject-centered, values clarification responses from them their students. The questioning strategy introduced to the Experimental group teachers not only enabled them to elicit and permit significantly more student values clarification statements but did so without a decrease in the amount of student content-oriented statements. Hence, teachers and teacher educators concerned that the stressing of 'affective' objectives will decrease the level of 'cognitive' participation in such lessons would find the questioning strategy utilized in this study useful to their own purposes.

Equally important as the above, the data regarding the use of functional and dysfunctional behaviors cannot be ignored. The finding that teachers use accidently and naturally more behaviors that run counter to their objectives than they do behaviors consistent with attaining those objectives was completely unexpected. The acquisition of a questioning strategy does not alter the frequency of these dysfunctional behaviors nor does it increase the number of functional behaviors. Probing behaviors appear to be the only exception to this interaction. These data would indicate that learning a questioning strategy without learning to increase functional and decrease dysfunctional behaviors would have little long term affect on product variables. However, the questioning strategy incorporated into a program whereby these functional behaviors could be taught and the dysfunctional behaviors reduced would probably have a significant effect in positive directions on student product variables.

CONCLUSIONS AND IMPLICATIONS

In regards to the major concerns reported in the introduction, this study:

a) presented one behaviorally-oriented definition of values clarification which when practiced can be studied empirically;
b) suggested at least one way the level of training teachers in values clarification can be made more adequate;
c) suggested at least one way teachers can utilize the values clarification curriculum materials they have available in more effective ways;
d) introduced a reliable, tested, and useable decriptive procedure and instrument to measure values development and changes in students; and,
e) provides empirical research evidence that teacher training procedures relative to values clarification instructional objectives can result in observable changes in both teacher and student behavior.

Finally, the results of this experimental study suggests that teacher educators who desire to assist teachers develop ways to transform values clarification instructional objectives into actual classroom experiences should include in their training sessions some instruction regarding specific questioning strategies that will enable teachers to secure this objective without sacrificing the content-objectives they also value.

If the questioning strategy is believed inappropriate, then two other choices are available(Casteel and Stahl, 1973, 1975): first, to help them develop or locate materials which have been designed to elicit these desireable patterns of student verbal behavior without teacher interference; and second, to help teachers recognize the desireable types or categories of student verbal behavior consistent with their instructional objective so that they know what types of student responses are appropriate and are relevant to their goal. Both of these procedures have been tested and are viable alternatives to the questioning procedure stressed in this particular research effort.

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*These materials are available free of charge by writing Dr. J.B. Hodges, Director of the Laboratory School. Mention where you heard about these materials. Zip code is 32611.

**These materials cost $1.30 which includes postage. Zip is 32611.

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[1] Due to lack of funds, the complete bibliography is not included in this section. See Stahl, 1975 for the complete references.